

RTIP ID# *(required)* : ORA000821**TCWG Consideration Date** : October 26, 2010**Project Description** *(clearly describe project)*

The California Department of Transportation – District 12 (Department) proposes to improve the State Route 91 (SR-91) in the City of Anaheim, Orange County by adding a westbound (WB) general purpose lane at the northbound (NB) SR-55 to WB SR-91 connector through the Tustin Avenue interchange (proposed project). The proposed project would relieve existing weaving, merging, and diverging (dividing a single traffic stream into separate streams) deficiencies between the connector and the Tustin Avenue off-ramp. The project limits are from Post Mile [PM] 7.9 to WB SR-91 PM 9.5 on SR-91 and the total length of the project is 1.6 miles (mi).

Current Lane Configuration along NB SR-55 and WB SR-91 Within Project Limits

Westbound SR-91 Section	Lane Configuration
SR-55 to Tustin Avenue	Three general-purpose lanes and one toll HOV lane.
Connector from NB SR-55	Two general-purpose lanes.
Tustin Avenue SR-91 on-ramp	One lane.
Tustin Avenue overcrossing	Three through lanes.
SR-91 under Tustin Avenue overcrossing	Four general-purpose lanes.
Tustin Avenue SR-91 off-ramp	One lane splits into two right-turn lanes and one left-turn lane.

Source: *Traffic Analysis Report*, Caltrans April 2009.

Note: General-purpose lane = a mainline freeway lane open to all traffic

HOV = high-occupancy lane, NB = northbound, SR-55 = State Route 55, SR-91 = State Route 91, WB = westbound

No Build Alternative (Alternative 1)

Under the No Build Alternative, the project segment of SR-91 would continue to operate over capacity and serve as a two-lane connector that merges to one lane at the connector terminus near the Riverdale Avenue overcrossing. Under the No Build Alternative, it is expected that through 2035, traffic weaving and merging deficiencies would continue to worsen if no freeway operational improvements are implemented within the project area.

Build Alternative 2

Alternative 2 would modify the existing configuration by extending the two lanes from the SR-55 connector, with one lane still dropping at the Tustin Avenue off-ramp and the other lane continuing through the interchange, under the overcrossing, and joining the existing general-purpose lane to the NB SR-55 connector west of the Tustin Avenue on-ramp. Some weaving would still occur; however, an additional lane would be provided to improve the weaving efficiency.

Build Alternative 3 (Preferred Alternative)

Alternative 3 would further reduce weaving between the NB SR-55 and WB SR-91 connector and the Tustin Avenue interchange by providing an additional connector lane (over Alternative 2) that would act as a bypass around the connector and merge back to the mainline before exiting to Tustin Avenue.

Type of Project *(use Table 1 on instruction sheet)*

Change to existing state highway

County Orange	Narrative Location/Route & Postmiles : SR-91, PM7.9/PM 9.5			
Caltrans Projects – EA# 0C5600 1200000078				
Lead Agency: California Department of Transportation				
Contact Person Reza Aurasteh, Branch Chief	Phone# 949.724.2738	Fax# 949.756.7633	Email reza_aurasteh@dot.ca.gov	
Hot Spot Pollutant of Concern (check one or both) PM2.5 ✓ PM10 ✓				
Federal Action for which Project-Level PM Conformity is Needed (check appropriate box)				
✓ Categorical Exclusion (NEPA)	EA or Draft EIS	FONSI or Final EIS	PS&E or Construction	Other
Scheduled Date of Federal Action: March/2011				
NEPA Delegation – Project Type (check appropriate box)				
Exempt	Section 6004 – Categorical Exemption		✓ Section 6005 – Non-Categorical Exemption	
Current Programming Dates (as appropriate)				
	PE/Environmental	ENG	ROW	CON
Start	Feb/2009	Jul/2011	Jul/2011	Oct/2014
End	Jul/2011	Apr/2013	Mar/2013	Aug/2016
Project Purpose and Need (Summary): (attach additional sheets as necessary)				
<p>The purpose of the proposed project is to reduce existing and future operational conflicts on SR-91 between the NB SR-55 to WB SR-91 connector and the WB Tustin Avenue off-ramp, including weaving and merging maneuvers. The specific objectives are described as follows:</p> <ul style="list-style-type: none"> • Reduce existing and future operational deficiencies at the NB SR-55 to WB SR-91 connector by improving weaving and merging traffic operations; • Improve merging and diverging traffic operations at the NB SR-55 to WB SR-91 connector through the Tustin Avenue interchange implementing the following improvements: 1) extending WB SR-91 general-purpose lane from the WB SR-91 Tustin Avenue on-ramp to the NB SR-55 to WB SR-91 connector, 2) reconstructing one WB SR-91 auxiliary lane, and 3) reconfigure the WB SR-91 off-ramp to Tustin Avenue from a single-lane exit to a two-lane exit. <p>The project is needed to remove the existing bottleneck and minimize existing and future operational deficiencies resulting from a high demand for weaving, merging, and diverging occurring at the NB SR-55 to WB SR-91 connector through the Tustin Avenue interchange resulting from the connector lane drop to the Tustin Avenue off-ramp.</p> <p>The need for this project is based on an assessment of the transportation demand and current and forecasted future traffic on SR-91 as measured by Level of Service (LOS). LOS is based on the ratio of traffic volume to the design capacity of the facility. LOS is expressed as a range from LOS A (free traffic flow with low volumes and high speeds, resulting in low traffic densities) to LOS F (traffic volumes that exceed capacity and result in forced flow operations at low speeds, resulting in high traffic densities).</p>				

Project Purpose and Need (Summary) continues...

Increasing traffic, extensive weaving, and merging on the NB SR-55 to WB SR-91 connector have been degrading the LOS within this project segment, particularly during the extended commuter peak hours. A chokepoint is a location in the freeway system where optimum roadway operation is degraded for a short distance due to unusually heavy vehicle weaving or merging movements. The NB SR-55 to WB SR-91 connector has been identified as a chokepoint because the existing configuration presents numerous traffic operational deficiencies. Specific operational deficiencies and chokepoints are as follows:

- There is a heavy traffic volume on the NB SR-55 to WB SR-91 connector during both the AM and the PM peak hours. The two lanes of the connector merge into one lane just prior to merging with the WB SR-91 mainline and this lane becomes a trap lane to the Tustin Avenue exit ramp. This configuration requires motorists to shift over one lane if they intend to continue on WB SR-91. Within this same area of the mainline, WB SR-91 motorists who intend to exit at Tustin Avenue are required to weave with the NB SR-55 to WB SR-91 connector motorists who are shifting onto the WB SR-91 mainline. The weaving of these heavy vehicle volumes generates severe operational deficiencies. The existing and future LOS at the weaving section of the freeway is F in the AM and PM peak hours. It is estimated that by the year of 2035 there will be a 23% increase in peak hourly traffic volume on WB SR-91 and on the NB SR-55 to WB SR-91 connector. This projected increase in mainline traffic volume along SR-91 will worsen the existing operational and capacity deficiencies at the NB SR-55 connector to WB SR-91. The projected traffic volume increase will also be worsen the LOS at the weaving section of SR-91 thus increasing congestion and reducing travel speed. The proposed project (both Alternative 2 and 3) would improve this deficient condition by minimizing the weave at this location.
- WB SR-91 has three general-purpose lanes and one FasTrak lane. Two general-purpose lanes from the NB SR-55 to WB SR-91 connector merge into a single lane just prior to merging with the three general-purpose lanes on the WB SR-91 mainline, thus providing a total of three general-purpose lanes plus one auxiliary lane. The auxiliary lane becomes a trap lane for the Tustin Avenue off-ramp and three general-purpose lanes continue through the Tustin Avenue interchange. A key contributor to the freeway chokepoint is that there are a total of four lanes approaching the Tustin Avenue interchange from WB SR-91 and NB SR-55 and only three general-purpose lanes proceeding through the Tustin Avenue interchange.
- The existing AM peak hour LOS upstream (east of project) and downstream (west of project) for the freeway mainline is D and E respectively. The AM peak hour LOS is projected to deteriorate to E (upstream) and F (downstream) by year 2035 if the project is not in place. With the implementation of the project, the freeway mainline AM peak hour LOS in the year 2035 is projected to be E (upstream) and E (downstream) under Alternative 2 and D (upstream) and D (downstream) under Alternative 3.

Surrounding Land Use/Traffic Generators *(especially effect on diesel traffic)*

The Proposed project site is within the City of Anaheim. There are surrounding commercial, residential and recreational land use. Within the project limits there are 2 interchanges: SR-91/ SR-55 interchange, and Tustin Ave Interchange. There is an overcrossing at East Riverdale Ave with no connection with SR-91 mainline. The freeway segment within the project limits cross Santa Ana River. There is a recreation lake at the northern quadrant of the western end of the project. La Palma Ave runs parallel to the freeway segment and is northerly located within less than ½ a mile. Additionally, diesel truck traffic currently makes up 6.5 percent of the total traffic volumes within the project limits. The proposed project would not significantly change the number of trucks or the characteristics of trucks within the project area.

Opening Year: Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility

Existing Annual Average Daily Traffic volumes (AADT), and AM/PM peak hour volumes for freeway segments within the project area are provided in Table 1. AADT data are based on volumes reported on Freeway Performance Measurement System (PEMS) for 2007 year.

The project build-out year is (2015). Traffic volume for 2015 was derived by applying a 6% growth factor to the existing volume. Caltrans Division of Planning provided the projection rates. The growth rate is based on the Orange County Transportation Analysis Model 3.2. Based on the projected peak hour volumes, the Level Of Service (LOS) was determined for the build-out year and is summarized in Table 2. Without the project implementation, both directions of SR-91 are estimated to experience significant congestion (LOS E) during the AM and (LOS D) PM peak hours.

Table 1**Year 2015 Traffic Volumes on WB SR-91 Mainline b/w Tustin Ave & SR-55**

No Build			Build			Change in Truck ADT
ADT	% Trucks	# Trucks	ADT	% Trucks	# Trucks	
120,000	6.5 %	7,800	120,000	6.5 %	7,800	0 %

Data Source: Caltrans Truck Traffic Census Volume 2009 Report

<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm>

Table 2**Year 2015 Traffic Level of Service**

Location	No Build		Build	
	AM Peak Hour LOS (Density)	PM Peak Hour LOS (Density)	AM Peak Hour LOS (Density)	PM Peak Hour LOS (Density)
WB SR-91 Mainline				
West of SR-55 Connector	E (41)	D (33)	C (24)	C (21)
East of SR-55 Connector	D (28)	C (22)	C (24)	C (19)

Density: Passenger cars per mile per lane

RTP Horizon Year / Design Year: Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility

The year 2035 is the design year. Intersection mainline and ramp volumes were projected by applying 23% growth factors as provided by Caltrans Division of Planning based on the OCTAM projections for the project study area.

Table 3**Year 2035 Traffic Volumes on WB SR-91 Mainline b/w Tustin Ave & SR-55**

No Build			Build			Change in Truck ADT
ADT	% Trucks	# Trucks	ADT	% Trucks	# Trucks	
139,200	6.5 %	9,050	139,200	6.5 %	9,050	0 %

Data Source: Caltrans Truck Traffic Census Volume 2009 Report

<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm>

Table 4**Year 2035 Traffic Level of Service**

Location	No Build		Build	
	AM Peak Hour LOS (Density)	PM Peak Hour LOS (Density)	AM Peak Hour LOS (Density)	PM Peak Hour LOS (Density)
WB SR-91 Mainline				
West of SR-55 Connector	F	E (45)	D (29)	C (25)
East of SR-55 Connector	E (36)	C (26)	D (29)	C (22)

Density: Passenger cars per mile per lane

Source: Caltrans Traffic Analysis Report, April 2009

Opening Year: If facility is an interchange(s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT**Year 2015 Traffic Volumes on WB SR-91 Mainline b/w Tustin Ave & SR-55**

No Build			Build			Change in Truck ADT
ADT	% Trucks	# Trucks	ADT	% Trucks	# Trucks	
120,000	6.5 %	7,800	120,000	6.5 %	7,800	0 %

RTP Horizon Year / Design Year: If facility is an interchange (s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT

Year 2035 Traffic Volumes on WB SR-91 Mainline b/w Tustin Ave & SR-55

No Build			Build			Change in Truck ADT
ADT	% Trucks	# Trucks	ADT	% Trucks	# Trucks	
139,200	6.5%	9,050	139,200	6.5%	9,050	0 %

Data Source: Caltrans Truck Traffic Census Volume 2009 Report

<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm>

Describe potential traffic redistribution effects of congestion relief *(impact on other facilities)*

The Regional Traffic Model produced by OCTA predicts ADT volumes based upon socio-economic data received from all of the counties and cities within their jurisdiction. The traffic volumes and peak hour demand are derived from the number of households, population, and number of jobs in the region. The ADT is derived by iterative model runs designed to determine the shortest route for travelers in time and distance. Additionally the State collects 24 hour data in a 5 minute increment through the PEMS database. Such data is the basis of projecting Design year ADT and volumes.

As a result of this project, the traffic coming from Northbound (NB) SR-55 to Westbound (WB) SR-91 used to compete/ weave with the traffic coming from WB SR-91 trying to exit to Tustin Ave. The project will redistribute the merge and weaving by geometrically separating the weaving volumes. The project will create a new ramp behind NB SR-55 to WB SR-91 connector eliminating the need to weave with NB SR-55 to WB SR-91 through traffic. Such redistribution is expected to relief the congestion resulting from the current weaving that occurs between such two heavy volumes weaving with each other creating bottle neck during peak hours.

The project is not expected to divert traffic to other routes, and the travel demand volume is not predicted to vary significantly between the build and no-build conditions.

The purpose of the proposed project is to alleviate existing and future traffic congestion along SR-91 during peak hours. The project would not generate new vehicular traffic trips. A regional traffic analysis prepared by the Orange County Transportation Authority (OCTA; August 2009) estimated the impact that the proposed project would have on regional Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT). This VMT and VHT data, along with the EMFAC2007 emission rates, were used to calculate the PM₁₀ and PM_{2.5}. The proposed project would reduce the PM₁₀ emission by 12 lbs/day, and reduce the PM_{2.5} emission by 13 lbs/day.

Comments/Explanation/Details (attach additional sheets as necessary)

The EPA's March 2006 guidance document *Transportation Guidance for Qualitative Hot-spot Analysis in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas* references a two step criteria to identify "a significant volume of diesel truck traffic." The first criterion is facilities with greater than 125,000 ADT volumes. If the first criterion is met, the second criterion is that 8 percent or more of said traffic volumes (i.e., 10,000 vehicles or more) are diesel truck traffic volumes.

As discussed above, traffic volumes within the project limits exceed 125,000 vehicles daily. However, the percentage of trucks along this corridor is 6.5 percent, which is below the national average of eight percent. A "significant increase" of diesel vehicles (trucks) is considered to be 5 percent when comparing Build with No Build alternatives. The average increase among all segments within the project limits would be 0 percent. As a result, the proposed project would not result in any increase of diesel vehicles. As such, the project would not result in a substantial increase in the number of diesel vehicles within the project area (i.e., the project limits of SR-91). According to the *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas*, this project is not a project of air quality concern under 40 CFR 93.123(b)(1).

The proposed project would not conflict with an applicable plan, policy, or regulation of an agency with jurisdiction over the project. The proposed project is also consistent with Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP) (RTP ID 2M01125) and Regional Transportation Improvement Program (RTIP) (RTIP ID ORA000821) and is intended to meet the traffic needs in the area based on local land use plans.